

Application Number 10/799,783
Amendment dated April 13, 2005
Reply to Office Action of January 30, 2006

Amendments to the Claims:

Please cancel claims 4-6 and 13 as follows. Please add new claims 33-38 as follows.

Please amend claims 1, 10, and 23 as follows.

This listing of claims replaces all prior versions, and listings, of claims in the application.

Listing of claims:

1. (Currently Amended) A semiconductor device, comprising:

a control signal generating circuit for generating a control signal responsive to an input signal related to a number of bits being processed by the semiconductor device, wherein the control signal is activated when the input signal indicates that the number of data bits being processed by the semiconductor device is more than a predetermined number of bits, and the control signal is inactivated when the input signal indicates that the number of bits being processed by the semiconductor device is less than the predetermined number of bits; and

an internal voltage generating circuit coupled to the control signal generating circuit for receiving the control signal, the internal voltage generating circuit comprising:

a comparing circuit for comparing a reference voltage to an internal voltage to generate a driving signal when the control signal is inactivated, wherein the comparing circuit comprises:

a comparator connected between a first node and a ground voltage and comparing the reference voltage to the internal voltage to generate the driving signal; and
a switching circuit connected between an external power voltage and the first node and cutting off the external power voltage applied to the comparator when the control signal is activated;

a driving signal control circuit for inactivating the driving signal when the control signal is activated; and

an internal voltage driving circuit for receiving [[an]]the external power voltage and generating the internal voltage in response to the driving signal.

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2. (Previously Presented) The device of claim 1, wherein the driving signal control circuit includes an NMOS transistor which has a drain connected to a driving signal generating terminal for generating the driving signal, a gate to which the control signal is applied, and a source connected to a ground voltage.

3. (Previously Presented) The device of claim 1, wherein the internal voltage driving circuit includes a PMOS transistor which has a source to which the external power voltage is applied, a gate to which the driving signal is applied, and a drain connected to an internal voltage generating terminal for generating the internal voltage, wherein the PMOS transistor turns the internal voltage to a reference voltage level in response to the driving signal and turns the internal voltage to an external power voltage level when the driving signal is inactivated.

4. - 6. (Canceled)

7. (Previously Presented) The device of claim 1, wherein the input signal is generated using a fuse.

8. (Previously Presented) The device of claim 1, wherein the input signal is generated using an external pad.

9. (Previously Presented) The device of claim 1, wherein the input signal is a mode setting signal comprising a plurality of mode setting bits.

10. (Currently Amended) A semiconductor device, comprising:
a control signal generating circuit for generating a control signal responsive to an input signal related to a number of bits being processed by the semiconductor device, wherein the control signal is activated when the input signal indicates that the number of data bits being processed by the semiconductor device is more than a predetermined number of bits, and the

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control signal is inactivated when the input signal indicates that the number of bits being processed by the semiconductor device is less than the predetermined number of bits; and

an internal voltage generating circuit coupled to the control signal generating circuit for receiving the control signal, the internal voltage generating circuit comprising:

a comparing circuit for comparing a reference voltage to an internal voltage to generate a comparing signal;

a switching circuit for transmitting the comparing signal as a driving signal when the control signal is inactivated, wherein the switching circuit includes a CMOS transmission gate which transmits the comparing signal as the driving signal when the control signal is inactivated;

a driving signal control circuit for inactivating the driving signal when the control signal is activated; and

an internal voltage driving circuit for receiving an external power voltage and generating the internal voltage in response to the driving signal.

11. (Previously Presented) The device of claim 10, wherein the driving signal control circuit includes an NMOS transistor which has a drain connected to a driving signal generating terminal for generating the driving signal, a gate to which the control signal is applied, and a source connected to a ground voltage.

12. (Previously Presented) The device of claim 10, wherein the internal voltage driving circuit includes a PMOS transistor which has a source to which the external power voltage is applied, a gate to which the driving signal is applied, and a drain connected to an internal voltage generating terminal for generating the internal voltage, wherein the PMOS transistor turns the internal voltage to a reference voltage level in response to the driving signal and turns the internal voltage to an external power voltage level when the driving signal is inactivated.

13. (Canceled)

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14. (Previously Presented) The device of claim 10, wherein the input signal is generated using a fuse.

15. (Previously Presented) The device of claim 10, wherein the input signal is generated using an external pad.

16. (Previously Presented) The device of claim 10, wherein the input signal is a mode setting signal comprising a plurality of mode setting bits.

17. (Withdrawn) An internal voltage generating circuit of a semiconductor device, comprising:

a control signal generating circuit for generating a control signal according to a number of data bits;

a first internal voltage generating circuit for receiving a reference voltage and an internal voltage to turn the internal voltage to a reference voltage level;

a second internal voltage generating circuit for receiving an external power voltage to turn the internal voltage to an external power voltage level;

a first switching circuit for supplying the external power voltage to the first internal voltage generating circuit when the control signal is inactivated; and

a second switching circuit for supplying the external power voltage to the second internal voltage generating circuit when the control signal is activated.

18. (Withdrawn) The circuit of claim 17, wherein the first switching circuit includes a CMOS transmission gate which supplies the external power voltage to the first internal voltage generating circuit when the control signal is inactivated.

19. (Withdrawn) The circuit of claim 17, whereint the switching circuit includes a

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CMOS transmission gate which supplies the external power voltage to the second internal voltage generating circuit when the control signal is inactivated.

20. (Withdrawn) The circuit of claim 17, wherein the control signal generating circuit activates or inactivates the control signal using a fuse option.

21. (Withdrawn) The circuit of claim 17, wherein the control signal generating circuit activates or inactivates the control signal using a bonding option.

22. (Withdrawn) The circuit of claim 17, wherein the control signal generating circuit activates or inactivates the control signal by receiving a mode setting signal together with a mode setting command.

23. (Currently Amended) A semiconductor device, comprising:

a control signal generating circuit for generating a control signal responsive to an input signal related to a number of bits being processed by the semiconductor device, wherein the control signal is activated when the input signal indicates that the number of data bits being processed by the semiconductor device is more than a predetermined number of bits, and the control signal is inactivated when the input signal indicates that the number of bits being processed by the semiconductor device is less than the predetermined number of bits; and

an internal voltage generating circuit coupled to the control signal generating circuit for receiving the control signal and comparing a reference voltage to an internal voltage to make the internal voltage have the reference voltage level in response to a driving signal when the control signal is inactivated, and to make the internal voltage have an external power voltage level when the control signal is activated, wherein the internal voltage generating circuit comprises at least one of a first switching circuit that cuts off an external power voltage applied to the internal voltage generating circuit when the control signal is activated, a second switching circuit that cuts off a ground voltage supplied to the internal voltage generating circuit when the control

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signal is activated, and a third switching circuit including a CMOS transmission gate which transmits the driving signal when the control signal is inactivated.

24. (Canceled)

25. (Previously Presented) The device of claim 23, wherein the internal voltage generating circuit includes:

a comparing circuit for comparing the reference voltage to the internal voltage to generate a comparing signal;

a switching circuit for transmitting the comparing signal as a driving signal when the control signal is inactivated;

a driving signal control circuit for inactivating the driving signal when the control signal is activated; and

an internal voltage driving circuit for receiving an external power voltage and generating the internal voltage in response to the driving signal.

26. (Withdrawn) The circuit of claim 23, wherein the second internal voltage generating circuit:

a first internal voltage generating circuit for receiving the second reference voltage and the second internal voltage to turn the second internal voltage to a second reference voltage level;

a second internal voltage generating circuit for receiving an external power voltage to turn the second internal voltage to an external power voltage level;

a first switching circuit for supplying the external power voltage to the first internal voltage generating circuit when the control signal is inactivated; and

a second switching circuit for supplying the external power voltage to the second internal voltage generating circuit when the control signal is activated.

27. (Previously Presented) The device of claim 23, wherein the input signal is

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generated using a fuse.

28. (Previously Presented) The device of claim 23, The device of claim 1, wherein the input signal is generated using an external pad.

29. (Previously Presented) The device of claim 23, wherein the input signal is a mode setting signal comprising a plurality of mode setting bits.

30. (Previously Presented) The device of claim 9, wherein a value represented by the mode setting bits and a mode setting command are used by the control signal generating circuit to generate the control signal, the value of the mode setting bits corresponding to the number of bits being processed by the semiconductor device.

31. (Previously Presented) The device of claim 16, wherein a value represented by the mode setting bits and a mode setting command are used by the control signal generating circuit to generate the control signal, the value of the mode setting bits corresponding to the number of bits being processed by the semiconductor device.

32. (Previously Presented) The device of claim 29, wherein a value represented by the mode setting bits and a mode setting command are used by the control signal generating circuit to generate the control signal, the value of the mode setting bits corresponding to the number of bits being processed by the semiconductor device.

33. (New) A semiconductor device, comprising:
a control signal generating circuit for generating a control signal responsive to an input signal related to a number of bits being processed by the semiconductor device, wherein the control signal is activated when the input signal indicates that the number of data bits being processed by the semiconductor device is more than a predetermined number of bits, and the

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control signal is inactivated when the input signal indicates that the number of bits being processed by the semiconductor device is less than the predetermined number of bits; and

an internal voltage generating circuit coupled to the control signal generating circuit for receiving the control signal, the internal voltage generating circuit comprising:

a comparing circuit for comparing a reference voltage to an internal voltage to generate a driving signal when the control signal is inactivated, wherein the comparing circuit comprises:

a comparator connected between a first node and a second node and comparing the reference voltage to the internal voltage to generate the driving signal;

a first switching circuit connected between the external power voltage and the first node and cutting off the external power voltage applied to the comparator when the control signal is activated; and

a second switching circuit connected between the second node and a ground voltage and cutting off a ground voltage supplied to the comparator when the control signal is activated;

a driving signal control circuit for inactivating the driving signal when the control signal is activated; and

an internal voltage driving circuit for receiving an external power voltage and generating the internal voltage in response to the driving signal.

34. (New) A semiconductor device, comprising:

a control signal generating circuit for generating a control signal responsive to an input signal related to a number of bits being processed by the semiconductor device, wherein the control signal is activated when the input signal indicates that the number of data bits being processed by the semiconductor device is more than a predetermined number of bits, and the control signal is inactivated when the input signal indicates that the number of bits being processed by the semiconductor device is less than the predetermined number of bits; and

an internal voltage generating circuit coupled to the control signal generating circuit for receiving the control signal, the internal voltage generating circuit comprising:

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a comparing circuit for comparing a reference voltage to an internal voltage to generate a driving signal when the control signal is inactivated, wherein the comparing circuit comprises:

a comparator connected between the external power voltage and a first node and comparing the reference voltage to the internal voltage to generate the driving signal; and

a switching circuit connected between the first node and a ground voltage and cutting off a ground voltage supplied to the comparator when the control signal is activated;

a driving signal control circuit for inactivating the driving signal when the control signal is activated; and

an internal voltage driving circuit for receiving an external power voltage and generating the internal voltage in response to the driving signal.

35. (New) An internal voltage generating circuit of a semiconductor device, comprising:

a control signal generating circuit for generating a control signal according to a number of data bits;

a comparing circuit for comparing a reference voltage to an internal voltage to generate a driving signal when the control signal is inactivated, wherein the comparing circuit includes:

a comparator connected between a first node and a ground voltage and comparing the reference voltage to the internal voltage to generate the driving signal; and

a switching circuit connected between the external power voltage and the first node and cutting off the external power voltage applied to the comparator when the control signal is activated;

a driving signal control circuit for inactivating the driving signal when the control signal is activated; and

an internal voltage driving circuit for receiving an external power voltage and generating the internal voltage in response to the driving signal.

36. (New) An internal voltage generating circuit of a semiconductor device, comprising:

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a control signal generating circuit for generating a control signal according to a number of data bits;

a comparing circuit for comparing a reference voltage to an internal voltage to generate a driving signal when the control signal is inactivated, wherein the comparing circuit includes:

a comparator connected between a first node and a second node and
comparing the reference voltage to the internal voltage to generate the driving signal;

a first switching circuit connected between the external power voltage and the first node and cutting off the external power voltage applied to the comparator when the control signal is activated; and

a second switching circuit connected between the second node and a ground voltage and cutting off a ground voltage supplied to the comparator when the control signal is activated;

a driving signal control circuit for inactivating the driving signal when the control signal is activated; and

an internal voltage driving circuit for receiving an external power voltage and generating the internal voltage in response to the driving signal.

37. (New) An internal voltage generating circuit of a semiconductor device, comprising:
a control signal generating circuit for generating a control signal according to a number of data bits;

a comparing circuit for comparing a reference voltage to an internal voltage to generate a driving signal when the control signal is inactivated, wherein the comparing circuit includes:

a comparator connected between the external power voltage and a first node and
comparing the reference voltage to the internal voltage to generate the driving signal; and

a switching circuit connected between the first node and a ground voltage and
cutting off a ground voltage supplied to the comparator when the control signal is activated;

a driving signal control circuit for inactivating the driving signal when the control signal

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is activated; and

an internal voltage driving circuit for receiving an external power voltage and generating the internal voltage in response to the driving signal.

38. (New) An internal voltage generating circuit of a semiconductor device, comprising:
 - a control signal generating circuit for generating a control signal according to a number of data bits;
 - a comparing circuit for comparing a reference voltage to an internal voltage to generate a comparing signal;
 - a switching circuit for transmitting the comparing signal as a driving signal when the control signal is inactivated, wherein the switching circuit includes a CMOS transmission gate which transmits the comparing signal as the driving signal when the control signal is inactivated;
 - a driving signal control circuit for inactivating the driving signal when the control signal is activated; and
 - an internal voltage driving circuit for receiving an external power voltage and generating the internal voltage in response to the driving signal.